The following listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-25 (canceled)

26.(presently amended) A light applicator with a diffusor which is attachable to a light guide and in which different diffusion regions with different scattering parameters follow successively along an optical axis of the light guide prelongated into the diffusor and in which the diffusion regions will overlap with respect to a line-of-sight aligned at a right angle to the optical axis of the light guide, wherein a boundary surface between adjacent diffusion regions has the shape of a laminar flow profile and wherein the diffusion regions are produced using silicone as a curable, liquid diffusion medium.

27.(original) A light applicator according to claim 26, wherein the boundary surface is formed in a paraboloidal way between the diffusion regions

28.(original) A light applicator according to claim 26, whose diffusor comprises a mirror element at its distal end.

29.(original) A light applicator according to claim 26, wherein the scattering probability increases towards the distal end due to the chosen scattering parameters in the diffusion regions.

30.(original) A light applicator according to claim 29, wherein the concentration of scattering centers as averaged over the cross-sectional surface area increases along the optical axis towards the distal end of the diffusor.

31.(original) A light applicator according to claim 26, whose diffusor has a homogeneous distribution of light along the optical axis as a result of the scattering parameters in the diffusion regions.

32.(original) A light applicator according to claim 26, wherein the diffusor is associated with reflection element by which the light emitted by the diffusor can be guided in predetermined directions

33.(original) A light applicator according to claim 32, wherein the reflection element is spherical segment which is applied on the diffusor and which is provided on one outer side with a layer reflecting the light.

34.(previously amended) A light applicator according to claim 32, wherein the transition between the light-emitting surface of the reflection element and the light-emitting surface of the diffusor has a conical nose [.

35.(previously amended) A light applicator according to claim 32, wherein the distribution of power density of light emitted by the diffusor along the optical axis has a local maximum in the region of the reflection element as a result of chosen scattering parameters in proximal diffusion regions.

36.(original) A light applicator according to claim 35, wherein the concentration of the scattering centers a averaged over the cross section has a local maximum, in the region of the reflection element.

37.(previously amended) A light applicator according to claim 35, wherein the concentration of scattering centers along the optical axis as averaged over the cross

sectional surface area shows a minimum between the proximal end and the distal end of the diffusor .

38.(original) A light applicator according to claim 32, wherein the distribution of light through the light-emitting surface of the reflections element and through the light-emitting surface of the diffusor is homogeneous.

39.(canceled)

40. (presently amended) A light applicator according to claim 26, wherein scattering particles present in the diffusion regions are TiO_2 or $BaSO_4$.

41.(original) A light applicator according to claim 26, wherein the diffusion regions are enclosed by a covering which has smaller refractive index than the refractive index of the diffusion regions

42.(original) A light applicator according to claim 26, whose light-emitting surfaces are covered by a partly backscattering layer.

43.(previously amended) A light applicator according to claim 26, whose diffusor's tube portion is flexible.

44.(previously amended) A light applicator according to claim 26, whose diffusor's tube portion is rigid.

45.(previously amended) A method for producing a diffusor/(light applicator), according to claim 26, which is connectable to a light guide and in which different diffusion regions with different scattering parameters are formed along an optical axis of the light guide prelongated into the diffusor, wherein:

- a hollow body is used for the diffusor which is filled at least in sections with a first diffusion medium,
- a second diffusion medium is injected into the first diffusion medium and
- tin the first diffusion medium a boundary surface shaped according to a laminar flow profile is formed between the first diffusion medium and the second diffusion medium as a result of the laminar flow of the second diffusion medium in the first medium.

46.(original) A method according to claim 45, wherein the boundary surface is formed in a paraboloidal way.

47.(original) A method according to claim 45, wherein the first diffusion medium and the second diffusion medium are each sucked into the hollow body.

48.(original) A method according to claim 45, wherein the second diffusion medium is injected from a first end of the hollow body into the first diffusion medium and a third diffusion medium is injected from a second end of the hollow body into the first diffusion medium.

49.(original) A method according to claim 45, wherein the diffusion media are cured.